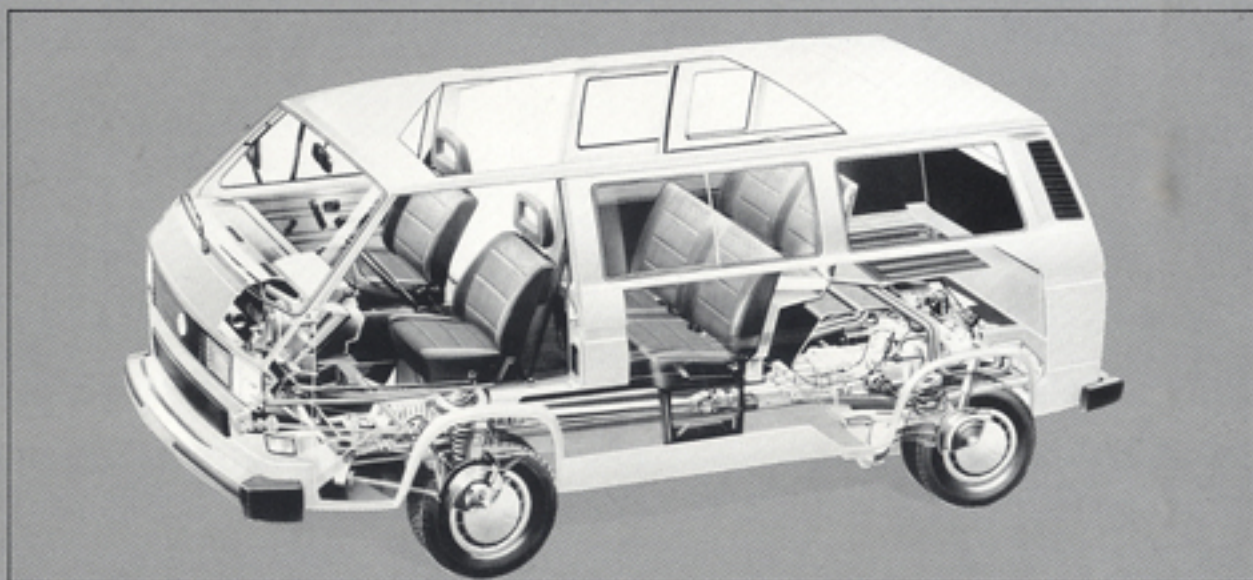

VANAGON SYNCRO

VANAGON SYNCR0

Vanagon Syncro America's Only Automatic All-Wheel Drive Van



The Vanagon Syncro System is featured in three models . . .

- Vanagon GL Syncro
- Vanagon Camper Syncro
- Vanagon Camper GL Syncro

This unique all-wheel drive system engages automatically when needed. It provides improved traction and handling in foul weather, on poor road surfaces, and on sharp turns.

There is no need for the driver to shift from the two-wheel to the all-wheel drive mode, nor is there any provision for doing so. The action is totally automatic to suit the situation.

VANAGON SYNCR0

Prospect Analysis

WHO WILL BE INTERESTED IN THE NEW VANAGON SYNCR0 MODELS AND WHO SHOULD BUY ONE?

Vanagon offers America's first and only production passenger vans and campers with automatic all-wheel drive. The feature is unique . . . it means more value to owners.

At the same time, it should be kept in mind that vans and campers appeal to a special segment of the market. A first-time van buyer may well be influenced to select a Vanagon GL Syncro because of the all-wheel drive feature. It's an important plus. However, a dedicated sedan or hardtop owner is not apt to switch body style preference on the strength of the drive type. Such prospects showing an interest in greater traction and peace of mind might be ready for a Quantum Syncro Wagon.

Traditional Four-Wheel Drive Owners

The Vanagon passenger van has always enjoyed a measure of appeal to owners of such vehicles as Cherokee and Wagoneer, Ford Bronco and Chevrolet S10 — largely because of Vanagon's outstanding utility. Now, the new Syncro version can heighten that appeal, particularly to owners who bought those competitive makes because of a four-wheel drive capability. To these prospects, the Vanagon Syncro automatic feature should have great appeal.

Recent Four-Wheel Drive Enthusiasts

The number of vehicles introducing four-wheel drive is increasing rapidly. Since most of these new models are sedans and hardtops, they do not represent direct competition for Vanagon. However, they do represent a shift from front-wheel drive to four-wheel drive and they can be expected to help further an important trend.

Vanagon, with its exclusive design, demonstrates once again the leadership quality of German engineering.

Van and Sport Utility Owners

Competitive van and sport utility models are commonly offered in four-wheel drive models that include a two-wheel drive mode as a driver-initiated option. Some are two-wheel drive only. None offer automatic all-wheel drive.

The most significant recent trend is the growth of the so-called mini-van, based largely on first-time van buyers. Vanagon is the ideal step-up vehicle for such owners because it combines added space with outstanding features. The Syncro design should increase Vanagon appeal to recent van converts.

Camping Enthusiasts Ready to Upgrade

Vanagon Camper models are distinctive in the marketplace. There are no other vehicles quite like them and this is generally recognized.

What's more, recent upgrade improvements in the line, particularly in camping appointments, have strengthened the unique appeal of Vanagon Camper. And now, the Syncro gives you yet another distinction to help conquest competitive owners.

Nor would you overlook current Vanagon and Vanagon Camper owners. Syncro can help convince them to return to market sooner.

VANAGON SYNCRO

The Basic Vehicle

WHAT IS SO DIFFERENT ABOUT VANAGON SYNCRO?

From an engineering standpoint, the basic difference is in the driveline.

Two-wheel drive vehicles use a single differential for the drive wheels (front or rear). Four-wheel drive vehicles use **two** differentials (one for the front wheels, one for the rear wheels), as well as some central mechanism to split the engine power between the front and rear wheels (normally a transfer case).

Permanent all-wheel drive vehicles like the Volkswagen Quantum Syncro use **three** differentials: one each for the front and rear driving wheels plus a unique third center differential that replaces the bulky, heavy, transfer case of other four-wheel drive vehicles and permits a highly desirable independence of action between the front and rear driving wheels not possible in conventional four-wheel drive systems.

The Vanagon Syncro offers a slightly different approach to all-wheel drive. It replaces the third differential with a fluid "viscous coupling", which allows the Syncro to automatically shift torque from the rear wheels to the front when and if the rear wheels begin to lose traction.

To the owner, the Vanagon Syncro automatic all-wheel drive provides the following benefits:

- **Better cornering** — In straightaway driving and gentle curves, under normal conditions, Vanagon Syncro models are in two-wheel drive. The rear wheels are propelling the vehicle.

In a sharp turn, however, the Vanagon Syncro automatically engages all-wheel drive to provide the traction of four powered wheels.

This helps eliminate wheel spin and reduces the possibility of oversteer.

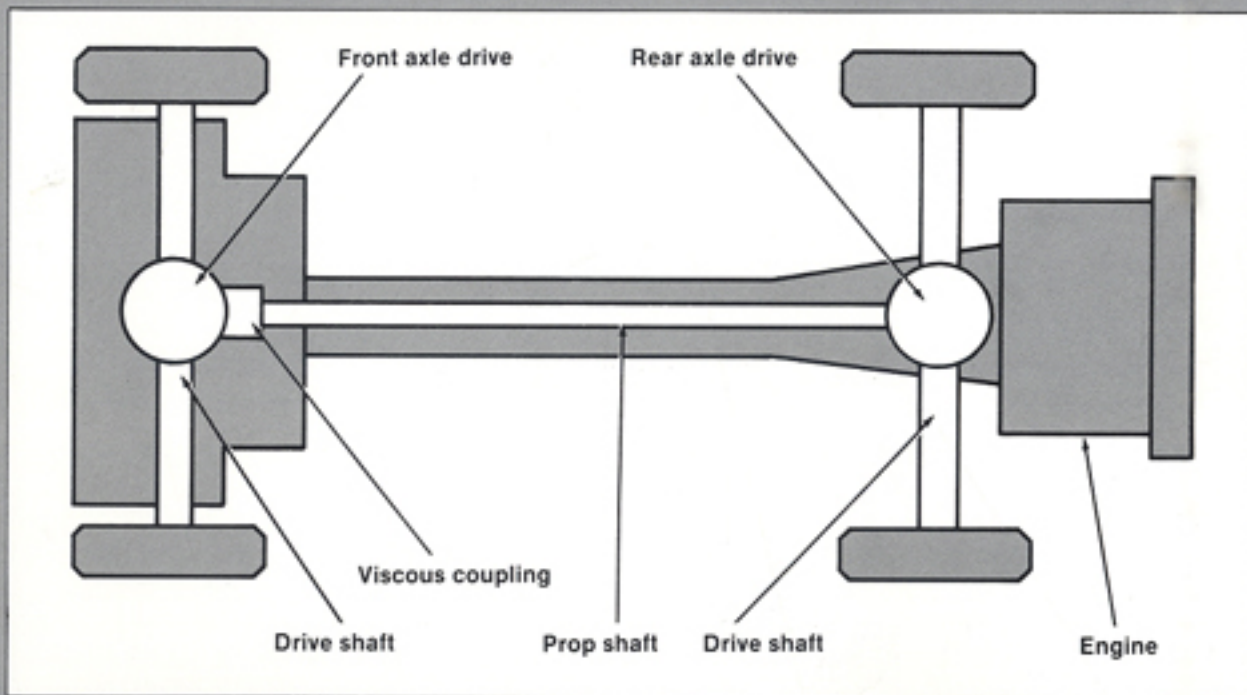
- **Ideal weight distribution** — Unlike many two-wheel drive and four-wheel drive vehicles, the Vanagon Syncro offers the almost perfect balance of approximately 50/50%.
- **Improved braking** — Stopping distances are slightly shortened when in the all-wheel drive mode under certain road conditions due to the fact that the front and rear axle are then coupled and because front disc brakes aid in braking the rear axle via the powertrain.
- **Superior design efficiency** — Compared to a transfer case, the compact, lightweight viscous coupling is located within the front final drive housing, thus saving weight to enhance both performance and economy while saving space and interior room.
- **Excellent economy** — Four-wheel drive vehicles are commonly associated with substantial penalties in fuel economy. In the Vanagon Syncro this is somewhat offset by the superior efficiency of a driving wheel (less slip, less loss). In fact, the estimated EPA city rating of the Vanagon Syncro is only one mile per gallon less than that of a two-wheel drive Vanagon.* And when you figure in the 2.5-gallon larger fuel tank, the Vanagon Syncro allows nearly the same cruising range.

* The EPA mileage estimates for a Vanagon GL are 16 mpg CITY and 18 mpg HIGHWAY; for a Vanagon GL Syncro, 15 mpg CITY and 15 mpg HIGHWAY. EPA mileages are to be used for comparison. Actual mileage may vary depending on speed, trip length and weather.

VANAGON SYNCR0

Vanagon All-Wheel Drive

HOW DOES VANAGON SOLVE THE WHEEL GEOMETRY PROBLEM?



All four-wheel drive vehicles use front and rear differentials to permit left and right powered wheels to turn at different speeds during cornering. The variance is how the front and rear sets of wheels are linked.

On most competitive four-wheel drive models, a transfer case located in the driveline forms a mechanical link between front and rear. In shift-on-the-fly versions, the driver can engage or disengage this linkup with a control to select two- or four-wheel drive.

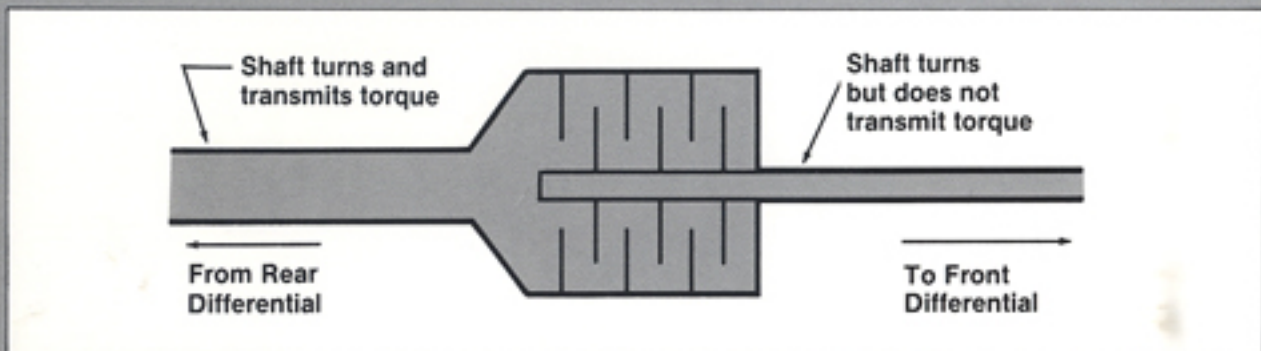
On the Quantum Syncro Wagon, a center differential is substituted for this transfer case,

allowing front and rear sets of wheels to turn at different speeds. The action is constant; Quantum Syncro is permanent all-wheel drive.

Vanagon Syncro models use a third approach. Here, a viscous coupling is incorporated in the driveline in place of the transfer case or center differential. In many respects, this viscous coupling acts as a differential but it is really more like a fluid clutch that automatically engages or disengages according to driving conditions.

Understanding this viscous coupling, then, is the key to master the Vanagon Syncro design.

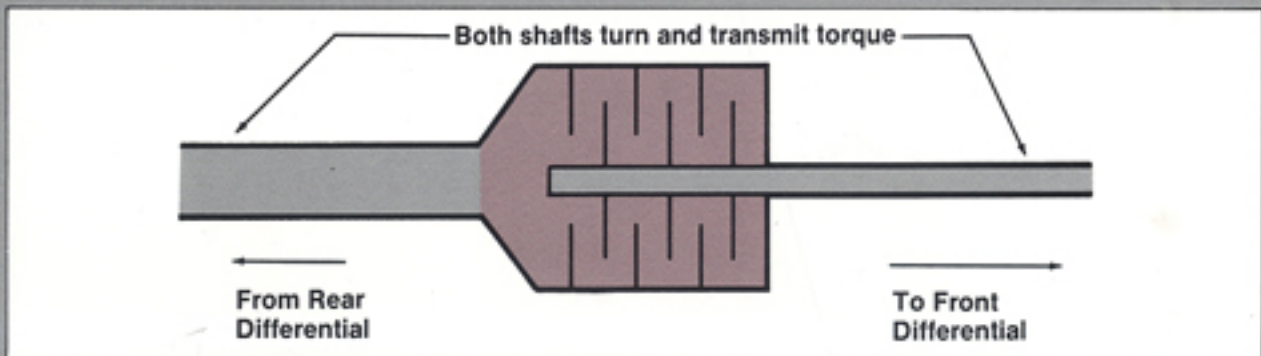
VANAGON SUPER



Viscous Coupling Disengaged . . . Only Rear Wheels Drive

When the rotating speeds of the front and rear wheels are the same or **approximately** the same (up to six percent speed difference), the viscous coupling is **disengaged**. By this it is meant that the rear differential shaft is **not** transmitting any **torque** to the front differential shaft.

In this situation, the front differential shaft is turning, of course, but it is not being directly driven by engine power. It is merely **free-wheeling** the same as the front wheels to which it is mechanically linked. The vehicle is in two-wheel drive.



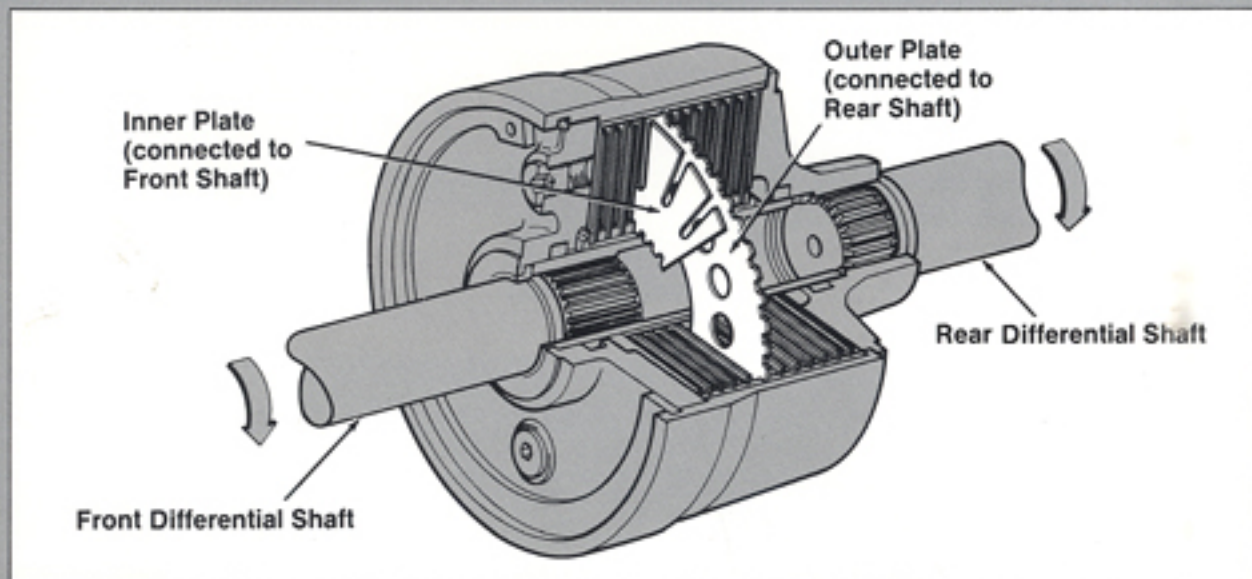
Viscous Coupling Engaged . . . All Four Wheels Drive

Wheel slip of the rear driving wheels or cornering will cause a difference in rotating speed of the front and rear wheels and the front and rear differential shafts.

Whenever this rotation speed **difference** exceeds

six percent, the viscous coupling automatically engages (or locks up). At this point, the drive torque of the input rear differential transmits engine torque through the viscous fluid to the output front differential shaft. The entire action is automatic. The vehicle is now in all-wheel drive.

VANAGON SUPER



Viscous Coupling Operation

The viscous coupling includes an input rear differential shaft connected through the housing to 24 externally splined plates. It also contains an output front differential shaft carrying 24 internally splined plates. The coupling itself is filled with special silicon fluid.

The two sets of plates interlace but do not touch each other. The only link between them is the viscous silicon fluid.

This silicon fluid is Volkswagen-patented. It has the unusual property of getting **thicker** (more viscous) when friction increases. This thickening characteristic is the key to the automatic engagement. It explains how the coupling "knows" when to engage or disengage.

Equal Wheel Speeds

On a relatively straight road with good traction, the speeds of the front and rear wheels are normally about equal.

The rear shaft and outer plates are transmitting torque to the silicon fluid. Since the inner plates are free-wheeling at the same rpm, there is little friction in the fluid itself. The fluid stays cool and thin. It will not transmit torque in this condition.

Unequal Wheel Speeds

Any difference in front and rear wheel speeds (rear wheel slip or sharp cornering) means the plates rotate at correspondingly unequal rates. This causes the silicon fluid to "shear" — to heat up and thicken. A speed difference of six percent or more makes the silicon fluid thicken to the point where it **does** transmit torque between plates. Engine torque now transmits to the front wheel and all-wheel drive is engaged.

VANAGON SYNCRON

The Theory of Fluid Couplings

Fluids, whether gaseous or liquid, can transmit force including twisting force (torque). A tornado and a whirlpool are but two examples in nature. You can take a simple plugged-in household fan and drive another unplugged fan to demonstrate this action.



What is less widely understood is that fluids in motion also generate heat which, unless dissipated, causes the fluid temperature to rise. An example here is the modern automatic transmission which in severe service can get hot to the touch.

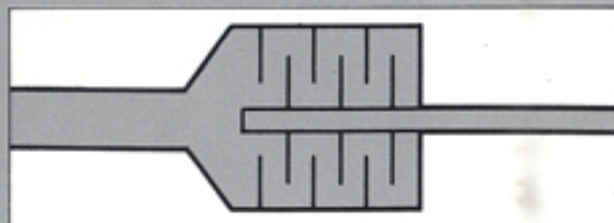
Transmission Fluid Couplings



In pre-torque converter days, an automatic transmission relied on a simple fluid coupling to act as a clutch. This coupling somewhat resembled a grapefruit cut in half with the section dividers being turbine blades.

The drive turbines circulated the transmission fluid to the point that the fluid turned the output turbine. The fact that the fluid slipped or sheared allowed a feathering action to permit smooth gear shifting.

Viscous Fluid Coupling



In the Vanagon Syncro viscous coupling, we do not have facing turbines. Instead, we have two sets of flat plates interlaced in parallel.

Another fundamental difference is that in the two-wheel drive mode (straightaway, not slip driving), each set is independently driven by a pair of vehicle wheels at the same speed.

Torque from the rear engine turns the outer plates and the rear wheels. The free-wheeling front wheels turn the inner plates at the same speed.

Since, in this situation, the two sets of plates are being independently rotated at the same speed, the viscous fluid spins without shear or fluid friction. There is no temperature rise.

If, however, the rear wheels slip or skid, or there is sharp cornering, their rotating speed differs from that of the front wheels. Shear quickly sets in to heat and thicken the fluid (in less than a quarter of a wheel turn). Now the inner plates are driven by the engine.

The process is self-regulating. As all-wheel drive equalizes wheel speed, the fluid cools and two-wheel drive is automatically resumed. However, cooling is a slower process — an important advantage when driving on a winding road or on one with patchy, slippery conditions.

VANAGON SYNCR0

WHAT ARE THE COMPETITIVE ADVANTAGES OF VANAGON AUTOMATIC ALL-WHEEL DRIVE?

Front-wheel drive vehicle owners and prospects are often superficially familiar with manual part-time systems and how they work. To many, having the choice of two modes seems like a good idea.

What they may not realize is that the typical manual system imposes certain penalties.

Aside from inconvenience of shifting, there is the question of **when** to shift. The driver must use "seat of the pants" judgment — and may not know the best times.

Again, the typical transfer case is inefficient compared to the Vanagon viscous coupling — in terms of weight, bulk and energy loss.

| CONVENIENCE | |
|--|--|
| (Syncro Automatic) | (Conventional Manual) |
| With the Vanagon Syncro design, the driver can concentrate on the primary driving tasks — steering, braking, watching the road. If conditions call for all-wheel drive, the Syncro viscous coupling engages automatically . . . and disengages automatically when the need passes. | Here, the driver is called upon to recognize the need. It may be obvious when the vehicle is struck, but much less so when the vehicle is travelling in borderline situations. And the driver must constantly remember to revert to two-wheel drive when desirable. He has no automatic feature to remember for him. |
| DRIVE-MODE EFFICIENCY | |
| (Syncro Automatic) | (Conventional Manual) |
| The viscous coupling uses an automatic system to determine which mode is best for individual driving conditions. As a result, the vehicle is basically always in the best mode for a variety of conditions. | The manual system makes mode selection an added burden of driving skill. Incorrect decisions will penalize performance efficiency. |

VANAGON SYNCR0

ECONOMY

| (Syncro Automatic) | (Conventional Manual) |
|---|---|
| <p>Fuel economy is not greatly reduced because of the greater efficiency of all-wheel drive and the weight savings of the viscous coupling compared to a transfer case.</p> | <p>Conventional systems using a transfer case incur weight and friction losses above those of the viscous coupling under comparable driving conditions.</p> <p>What's more, with this conventional design there may be greater fuel economy variation from driver to driver because an additional driver skill is involved.</p> |

PACKAGE EFFICIENCY

| (Syncro Automatic) | (Conventional Manual) |
|---|---|
| <p>The Syncro viscous coupling is integrated into the front axle final drive, preserving interior space. The Syncro's maximum cargo capacity is identical to that of the conventional two-wheel drive Vanagon. And, compared to the conventional Vanagon, a short step-up distance is increased by approximately one inch, maintaining easy passenger and cargo compartment access.</p> | <p>The inclusion of a bulky transfer case creates a design dilemma. In most cases, ground clearance must be greatly increased and the vehicle raised. This decreases entry ease and raises the center of gravity, adversely affecting ride and cornering stability.</p> |

VANAGON SYNCR0

As A Total Vehicle . . .

WHAT ARE THE MAJOR BENEFITS OF VANAGON SYNCR0 MODELS?

| FEATURE | CUSTOMER BENEFITS |
|---------------------------|---|
| Automatic All-Wheel Drive | <p>The convenience of automatic shifting between modes. The precision and efficiency of road-tuned shifting as opposed to driver judgment.</p> <p>The economy benefits of a lightweight viscous coupling as opposed to a heavier, higher friction transfer case.</p> <p>Ease of entry and exit due to low door sills.</p> |

In Addition . . .

VANAGON AND VANAGON SYNCR0 SHARE THE FOLLOWING NEW FEATURES AND BENEFITS

| FEATURE | CUSTOMER BENEFITS |
|--|---|
| <p>Drive Train</p> <ul style="list-style-type: none"> • 2.1-liter, 4-cylinder rear engine • Digifant fuel and ignition control system • 4-speed manual transmission with additional low gear | <p>Balanced vehicle weight distribution for optimum traction.</p> <p>Improved idle characteristics, acceleration, deceleration, and overall driveability.</p> <p>Fully synchronized for smooth shifting.</p> <p>Numerical high gear ratios in "low" and "reverse" for improved vehicle "lugging" on steep grades or with heavy loads.</p> |

VANAGON SUNGLO

| FEATURE | CUSTOMER BENEFITS |
|--|--|
| <p>Chassis</p> <ul style="list-style-type: none"> • Independent front and rear suspension • Power brakes (front disc, rear drum) • Power rack-and-pinion steering (power std. GL only) • Extra-large 18.4-gallon fuel tank <p>Body</p> <ul style="list-style-type: none"> • High level of standard equipment • Vanagon versatility | <p>Enhanced ride stability over uneven road surfaces.</p> <p>Less brake pedal effort, minimized brake fade.</p> <p>Improved steering ease, more sensitive response.</p> <p>Increased cruising range.</p> <p>Velour upholstery, fold-down rear seat backrest, full carpeting, digital clock, illuminated vanity mirror, locking glove box, full instrumentation including tachometer, dual outside mirrors, sliding side door, tinted glass, electric rear window defogger, intermittent wipers.*</p> <p>The use of up to 201 cubic feet of highly usable storage capacity with the rear seat down and center seat removed. Or seating for 7 passengers.</p> <p><small>* Not all listed equipment is standard or available on all models. Consult product literature for specific availability.</small></p> |

VANAGON SYNCR0

HOW TO PRESENT THE VANAGON SYNCR0 PASSENGER VAN

1. Start at the front of the vehicle, then walk along one side toward the rear while telling the automatically engaging all-wheel drive story. Stress the exclusive nature of this feature . . . that this vehicle is America's only all-wheel drive passenger van.

Stress benefits in terms of handling in everyday driving, as well as poor road conditions.

Make sure the customer understands why the Syncro system is superior to two-wheel and part-time four-wheel drive. Be prepared to answer technical questions.

2. Stop at the rear of the vehicle and open the liftgate. Point out that the Vanagon Syncro features the more powerful 2.1-liter, water-cooled engine now standard on all 1986 Vanagons.

Mention its new Digifant fuel injection system which offers better overall driveability. Also discuss the addition of longer life spark plugs and the elimination of the 1,000-mile service visit.

Be sure to remind the prospect that the Vanagon's rear-engine, rear-drive configuration provides excellent traction even in the two-wheel drive mode.

Before you close the liftgate, mention the fact that the Volkswagen Syncro offers an exceptional cargo capacity of almost 50 cubic feet even with a full complement of passengers.

3. Move to the right side of the vehicle. Cover the upgraded 205/70R14 radial tires. Also point out that the suspension travel has been increased to help Syncro models take rough

roads in stride, while the ground clearance has been raised as well for the very same reason.

Mention that guard rails are fitted on both sides of the drive shaft to help protect it against damage in extreme driving conditions. Also cover the fact that the engine, gearbox and front axle also feature special guards for their own protection in similar situations.

4. Open the sliding door. Demonstrate the ease of entry, then discuss the interior roominess, the comfortable seating and the handsome velour interior (corduroy in the Camper Syncro).

Emphasize the 92.9 cubic feet of cargo space available with the rear seat down and the 201 cubic feet available when the center seat is also removed.

If showing a Syncro Camper, point out all the special touring amenities built right in as well as the vehicle's easy transformation to its twin double bed configuration.

5. At the front, point out the new Euro headlamps. Stress the excellent "overview" from the driver's high seating position. Also, be sure to mention the availability of optional power, heated mirrors.

Discuss the fact that the front axle is a completely new sub-frame structure with final drive and integrated viscous coupling. Explain how they work when power is automatically transferred to the front when needed for better overall traction.

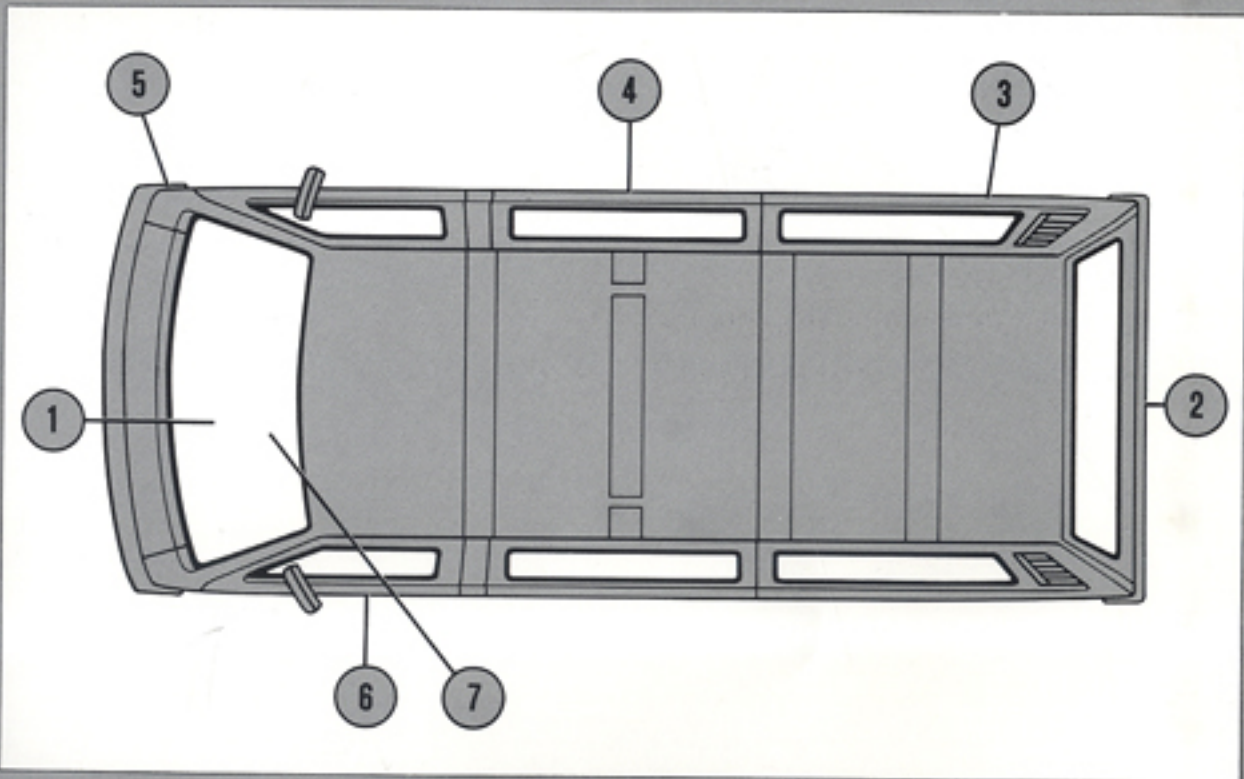
VANAGON SYNCR0

HOW TO PRESENT THE VANAGON SYNCRO PASSENGER VAN (Cont'd)

6. Move to the left side. As you open the driver's door, invite the prospect to sit behind the wheel and enjoy the excellent all-around visibility.
7. With the prospect behind the wheel, cover the many standard features that add to owner

comfort and convenience. Touch every base here, giving a full interior story.

At the conclusion of the presentation, make a strong pitch for a demonstration drive. Your real story is on the road.



VANAGON SYNCR0

HOW TO SELL TO COMPETITIVE OWNERS

In selling to competitive owners, it is important to determine the prospect's experience, if any, with four-wheel drive vehicles. Such experience will probably color the attitude he brings to the showroom.

It is your responsibility, then, to qualify the prospect by both presentation and past experience and be alert to correct any mistaken preconceptions regarding the Vanagon Syncro. Remember, the prospect may not appreciate that this vehicle is truly in a class by itself.

Generally, prospects can be grouped into four broad categories, bearing in mind that every shopper is an individual with individual needs and attitudes.

Traditional Four-Wheel Drive Owners

Included here are owners of sport utility vehicles such as Broncos, Blazers, Jeep Cherokees and Wagoneers, Ramchargers and Trailblazers, and to some extent, the AMC Eagle.

Their suitability depends upon the actual use they put such vehicles to. To the extent their use was in heavy off-roading, they may not find the Vanagon Syncro a suitable replacement.

However, if such owners merely sought dependable transportation for demanding on-road use (for example, hard-winter suburbs), they may really prefer a vehicle with Syncro.

If so, sell them Syncro traction . . . sell them Volkswagen's commitment to quality. Mention that Volkswagen AG has successfully tested the Vanagon Syncro system around the world in a wide variety of terrains and climates.

Recent All-Wheel Drive Owners

Here we're talking more recent owners of such makes as Toyota, Subaru and Colt. AMC Eagle should be included here, too, since it was introduced as an all-wheel drive family vehicle.

The key here is whether they are also now interested in a large space-efficient van or camper. If so, explain how manual systems impose penalties in convenience and driving efficiency. Your presentation also should show the Volkswagen approach **solved** the problem with a truly innovative chassis design. You should certainly stress the benefits of German engineering leadership to these prospects.

VANAGON SYNCR0

HOW TO DEMONSTRATE THE VANAGON SYNCR0

Even the best showroom presentation of the Vanagon Syncro cannot do justice to this unique vehicle.

The engineering breakthrough can be neither seen nor properly appreciated when the key design elements are hidden below the floor. And the feel for the vehicle the prospect can get in the showroom is no substitute for the exhilarating feeling he would get from driving one.

The Vanagon Syncro is an unusual vehicle by any standard and it's unprecedented for a passenger van. If you don't want the prospect to walk, make sure he **drives**.

Plan your demonstration route ahead of time. Look for roads with imperfect surfaces. And be sure to include roads that curve.

During the drive, stress the quietness and smoothness of the viscous coupling at work.

On high-speed curves, point out that the automatically engaging all-wheel drive is not a demanding feature — that the vehicle is user-friendly and easy to get used to . . . that this is a fun-to-drive passenger van with no worry about when to switch modes.

(NOTE: As with any demonstration drive, make sure all local speed and traffic regulations are obeyed.)

Explain that the Vanagon Syncro reflects the special virtues of advanced German engineering with its concern for practical value . . . how Volkswagen has built its reputation on engineering leadership.

In city driving, talk about steering and braking. Have the prospect park the car in a curb situation, if possible. While parked, invite questions.

After returning to the dealership, again invite questions before making your closing presentation.

Syncro is a registered trademark of Volkswagen United States, Inc.

Volkswagen United States, Inc. believes the specifications in this guide to be correct at time of printing. However, specifications, standard equipment and options are subject to change without notice. Some options may be unavailable when the vehicle is built. The dealer should be consulted for advice concerning current availability of options and verification that an ordered vehicle includes ordered optional equipment.

Printed in U.S.A.

VANAGON Syncro

HOW TO SELL TO COMPETITIVE OWNERS (Cont'd)

Van Owners

Remember that conventional van owners are prime Vanagon prospects, too — whether they're looking for a full-size replacement or thinking of moving into a mini-van. Either way, the Vanagon Syncro fits the bill.

Like all Vanagons, the Syncro models offer remarkable carrying capacity (both passengers and cargo) that belie their trim overall size and ease of handling. Add to those virtues the extra dimension of all-wheel drive and you can be sure that many van owners will be interested in this unique combination of practicality and innovation.

Camping Enthusiasts Ready To Upgrade

Campers satisfy their desires with a number of arrangements — pop-up trailers . . . full-length travel trailers . . . motor homes, mini and otherwise.

For most, the space efficiency and convenience features of Vanagon Campers are your primary persuaders. The Syncro automatic all-wheel drive feature is a bonus benefit that may provide the closer.

Don't forget, either, established Vanagon Camper owners — particularly those with older models. Although not competitive owners, they certainly can be impressed by recent significant upgrades in the camper interior package. And the Syncro advance further confirms German engineering leadership.

VANAGON SYNCRO
