

Redefining Refractions With Optical Path Diagnostics:

Harvesting more data in less time — with superior patient outcomes and satisfaction

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Gaddie Eye Center, Louisville, Ky.

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A New Age in Digital Refractions

The XFRACTIONSM Process integrates wavefront diagnostics and quickly reports a wealth of data in faster, more accurate refractions.

Ian Gaddie, OD, FAAO

Gaddie Eye Center, Louisville, Ky.

Refraction is the cornerstone of vision correction, and over the years, companies have designed faster and more accurate refractors to streamline the process. The latest advance, the XFRACTION process from Marco, combines two powerful tools — the OPD-Scan III autorefractor/keratometer wavefront aberrometer and the TRS-5100 digital refractor — to produce a wavefront-optimized refraction in less time. The savings in time alone can be significant, and according to Ben Gaddie, OD, owner and director of Gaddie Eye Centers in Louisville, Ky., this system elevates the comprehensive eye examination to an entirely new level of understanding the optical pathway. Here's how.

Wealth of Information

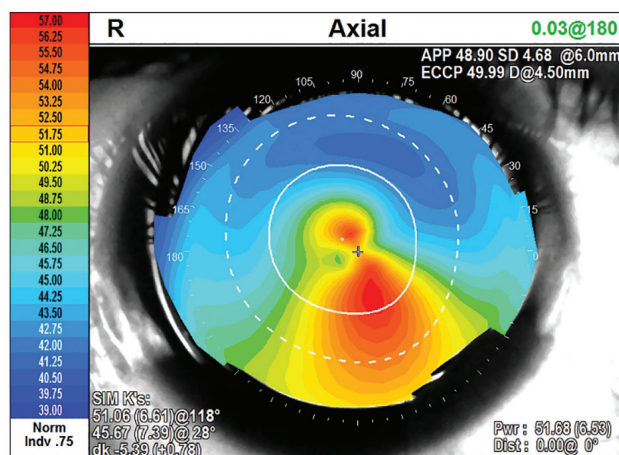
The OPD-Scan III fills the optical pathway with light vectors, captures 2,520 data points, and provides more than 20 wavefront diagnostics in 10 seconds per eye. In addition to autorefraction, it measures corneal topography and identifies higher-order aberrations. "Most eye

Identifying the Elusive 'X' Factors in the Visual Pathway

The XFRACTION process is so named for its ability to help doctors discern previously confounding x-factors that can compromise the total visual system. Dr. Gaddie has experienced this benefit.

"Since transitioning from my standard refraction to wavefront optimized refraction with the OPD-Scan III and TRS-5100, I'm able to identify acuity-limiting conditions that were previously undiagnosed. I'm amazed by how many patients who are seeing 20/20 with their current eyeglasses have the potential for significant visual improvement with wavefront-guided refraction," he says.

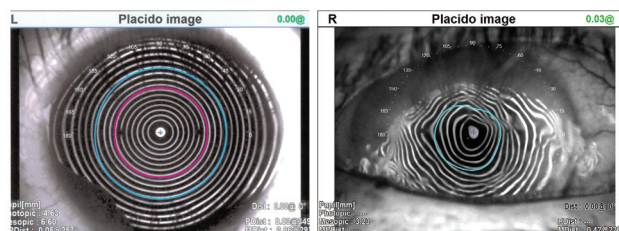
Even patients who have significant aberrations and have never had crisp vision appreciate that Dr. Gaddie can demonstrate why they haven't been able to see well. "For many, just understanding the reason why gives them a psychological boost," he says. "All in all, patients are more engaged and impressed with the XFRACTION process."



Axial map (topography) showing irregular, and asymmetric astigmatism indicative of corneal ectasia, as seen in this case of keratoconus.

doctors have topographers, but we typically use them for our contact lens patients or when we suspect pathology," Dr. Gaddie says. "Therefore, many of our patients don't receive topography and the diagnostic value that comes from it. The OPD-Scan III measures topography automatically, presenting all of the data for me to easily analyze.

"Sometimes, I'm surprised by what the topography reveals, especially if I obtained a good refraction and the patient is seeing well," Dr. Gaddie says. "I'm reminded of the value of the OPD-Scan III every time I diagnose heretofore undetected pathology, such as keratoconus or pellucid marginal degeneration. This instrument simply helps me to be a better doctor."



Cornea and Tear Film Testing.

Efficient Flow

Because the OPD-Scan III includes corneal topography, patient flow is streamlined. “We don’t have to move patients from one room for autorefraction to another for topography, load their information into the topographer, obtain the image and either print it or push it via our software to the examination room,” Dr. Gaddie says. “This saves at least 4 to 5 minutes per patient, which is time that could be better spent with patients or seeing more patients per day.”

Accurate, Reliable Data

With XFRACTION, preclinical data collected from wavefront-guided autorefraction and lensometry are

transmitted to the lane and used for subjective refraction. “It’s a totally different refractive experience that patients receive,” Dr. Gaddie says. “In addition to being fast and efficient, pretesting with XFRACTION yields a more accurate starting point for subjective refraction. I can usually refine a wavefront-guided refraction in less than 2 minutes. In today’s pressured clinical world, time is money, and efficiency is the key to staying on schedule.”

Dr. Gaddie also appreciates being able to integrate clinical testing data with his EMR. “The time saved by not having to read, record and transcribe this information into our electronic health record may be incrementally small, but over the course of thousands of patients, it translates to real money for the bottom line,” he says. “And, more importantly, the seamless accuracy and integrity of data recording allow me to spend more time discussing visual problems and solutions with patients.”

Solving the Night Vision Dilemma

Another unique and valuable function of the OPD-Scan III is automatic acquisition of daytime and nighttime refractions. “We’ve all been stumped by patients who say they’re having trouble with driving at night, even though they’re seeing 20/15 in the office,” Dr. Gaddie says. “By analyzing the eyes in scotopic and



Night and Day: This patient has a refractive shift from 3 mm pupil size to 5 mm size consisting of 0.50 D increase in myopia and a decrease in astigmatism of 1.00 D. The scenes demonstrate the “uncorrected” vs “corrected” views to the patient.

photopic settings, the OPD-Scan III quickly identifies the small percentage of patients who experience a significant shift in vision as the pupils widen in dim light. Sometimes patients have media opacities that are not in the visual axis during daylight hours, but at night when the pupils dilate, all of a sudden they’re compromising the patient’s vision.”

Being able to demonstrate to a patient that he has a significant change in vision at night and to explain the reason why supports Dr. Gaddie’s recommendation of a second pair of eyeglasses with a prescription specifically for nighttime activities, most importantly, driving.

Increased Optical Conversions

Optical conversions depend on many factors, not the least of which is a patient’s perception of his need to update his prescription. According to Dr. Gaddie, one of the most common questions patients ask after a refraction is, “Has my prescription changed?” Usually, the answer is yes, so the next question is, “Has it changed enough for me to need new glasses?”

“With the OPD-driven TRS-5100 automated refraction process, I can compare today’s refraction with the prescription in a patient’s current eyeglasses,” he says. “With one touch of a button, patients can instantly compare their old and new prescription and see for themselves the improvement they will gain with their new prescription. A change that might be inconsequential for one patient might be a big improvement for another, and I can’t judge that based on the magnitude change of a number. Being able to simultaneously compare new versus old prescriptions is a game-changer for patients, and my conversion rate and multiple-pair metrics have never been higher.”

New Level of Precision

Wavefront optimized refraction represents a new age in digital refractions. “I have used various autorefractors in my career, and many have provided a good starting point for subjective refraction,” Dr. Gaddie says. “However, with the OPD-Scan III and the TRS-5100, I now have the accuracy of wavefront-guided refractive data to quickly and precisely generate the best refractive endpoints and visual satisfaction. To be able to optimize an autorefraction based on the aberrations in each patient’s visual system takes refraction to a whole new level of precision ... and personalization.” ■

A Rock Solid Investment in Practice Growth

With the XFRACTIONSM Process, this OD is measuring his ROI in increased revenue and enhanced practice image.

Marcus Gleaton, OD

Aledo Family Eye Care, Aledo, Texas

The decision to invest in capital equipment is not made lightly, especially for a solo practitioner. Just ask optometrist Marcus Gleaton. Eleven years after opening Aledo Family Eye Care in Aledo, Texas, Dr. Gleaton had three major goals aimed at taking his practice to the next level. “I wanted to increase the number of examinations I could perform each day, and I wanted to increase optical revenue,” he says. “Equally important, I wanted to create a ‘Wow!’ factor for my new and existing patients.”

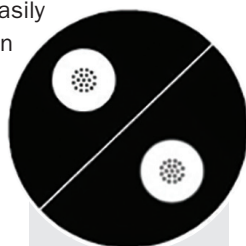
Dr. Gleaton decided to invest in the OPD-Scan III wavefront aberrometer and the TRS-5100 digital autorefractor — together known as the XFRACTIONSM process from Marco — along with the LM-600 auto lensmeter. “This is the largest single purchase I’ve made since opening my practice,” Dr. Gleaton says, “but I can easily say I would make the purchase again if given the option.” In this article, Dr. Gleaton explains how the XFRACTION process has been helping him grow his practice.

Increased Efficiency

The OPD-Scan III incorporates autorefraction, keratometry, pupillometry, corneal topography, wavefront aberrometry, retroillumination and day/night measurements, providing more than 20 diagnostics. In less than 1 minute, a wavefront-optimized refraction can discern whether or not a patient will require a full refraction to achieve 20/20 visual acuity. The TRS-5100 completes the required refraction with digital speed and accuracy.

“As with any new technology, there’s a learning curve,” Dr. Gleaton says. “I was actually slower with refractions for about 1 week. Then, my Marco representative installed the various programs for refraction, and I immediately noticed my refraction time decreased. I’m saving an average of 3 to 5 minutes per patient, and as a result, I’ve increased

One of the advantages of the TRS-5100 that both patients and practitioners appreciate is that it uses a **split prism**. “This function allows for simultaneous vision, which enables patients to determine cylinder and axis choices with greater speed and confidence,” Dr. Gleaton says.



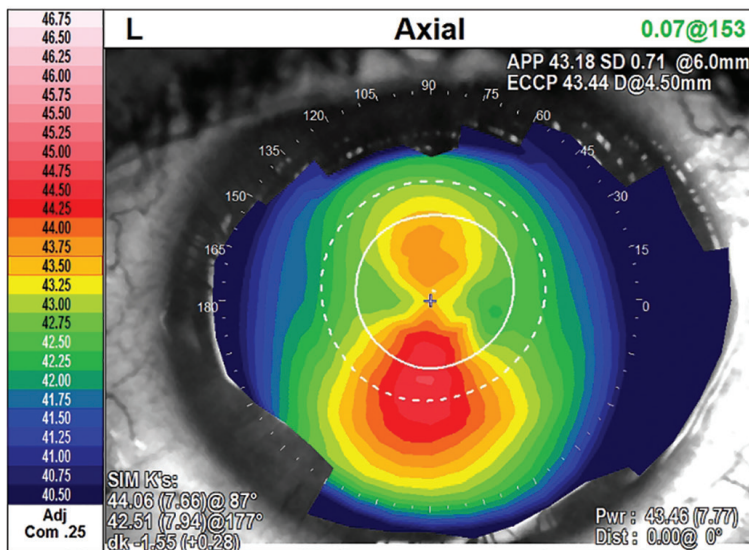
The split prism presents the patient with the choices simultaneously during the Jackson Cross-Cylinder testing.

my examination slots by four per day after only 4 weeks of use. I estimate my comprehensive eye examinations are up 10% over last year, without adding any hours to the schedule.”

Increased Optical Revenue

One of the advantages of the TRS-5100, that both patients and practitioners appreciate, is that it uses a split prism. “This function allows for simultaneous vision, which enables patients to determine cylinder and axis choices with greater speed and confidence,” Dr. Gleaton says. “The system also allows me to quickly demonstrate the difference between a patient’s current and new prescription with the touch of a button. This, in turn, makes it easier for patients to justify an update in their prescriptions ... and value the difference.”

One of the challenges any practitioner faces is counseling patients about whether or not they need new eyeglasses. “In the past, if a prescription change was minimal, I would have to try to explain a quarter of a diopter change to the patient. Now, I can present both prescriptions to patients within seconds and let them see for themselves. This process actually engages the patient



The axial map shows regular but asymmetric astigmatism which results in changing astigmatism as the pupil enlarges, and high order aberrations such as coma.

in a critical way. It reduces explanation time and is much more effective. I estimate our frame and lens sales have increased by 5% to 10% since we installed the XFRACTION process."

'Wow!' Factor

As for the creating a "Wow!" experience for his patients, Dr. Gleaton says he has no doubt he has reached this goal. "Every day, patients tell me my new equipment is 'amazing,' 'fancy' and 'cool,'" he says. "Hopefully, this enthusiasm will translate into referrals as patients tell friends and family members about their recent experience in my office."



In fact, the enthusiasm has been contagious in Dr. Gleaton's practice. "My staff enjoys the new equipment, as well," he says. "The card reader system reduces transcription errors and increases efficiency. This results in less stress for my staff. They also like to be part of a team that is continually updating equipment and improving patient care."

Additional Benefits

The OPD-Scan III automatically measures corneal topography and identifies higher-order aberrations, which not only aids in acquiring an accurate refraction but also may detect previously undiagnosed pathology. "During the first 3 months of integrating XFRACTION, I discovered two new cases of keratoconus," Dr. Gleaton says. "These

were mild cases and didn't require drastic measures for visual correction, but the topography scans did aid my description of the condition to these patients and helped them understand the visual challenges they've experienced in the past."

Another benefit of having corneal topography maps generated by the OPD-Scan III is that practitioners can show patients their irregular corneal astigmatism and explain how it affects their vision. "Patients can see the color differences on the maps and visually appreciate why they are unable to achieve 20/20 vision," Dr. Gleaton says. "I have also been able to explain nighttime vision problems due to day/night refraction differences associated with changes in pupil size."

Dr. Gleaton's technician performs the OPD-Scan III on every patient over the age of 8 years. "Prior to the installation of the OPD-Scan III, I didn't perform topography on all patients," Dr. Gleaton says. "I feel more comfortable as a practitioner gathering more data on each patient, especially since acquisition is so rapid."

Commitment to Eye Health

Although the decision to invest in the XFRACTION process was made after careful deliberation, Dr. Gleaton was concerned that he might not realize substantial benefits, at least not right away. "I had my doubts as to whether this technology would make a noticeable difference in my practice beyond the 'cool' factor, but those doubts quickly faded," he says. "The XFRACTION system has been a positive addition to my practice, particularly when considering return on investment and practice image. I believe that utilizing this cutting-edge technology has set my practice apart, creating a positive first impression for new patients and assuring my existing patients that I'm committed to providing the best possible eye care." ■

Improving Patient Experience

Speed, accuracy and efficiency can be quantified, but some other benefits of XFRACTIONSM have immeasurable value.

Brett M. Paepke, OD

FirstView Eye Care Associates, Plattsburgh, N.Y.

Anyone involved with the business of eye care knows the value of metrics. Whether you add functionality to your website, change your recall system or add new equipment, you want tangible evidence that these changes have had a positive impact on your practice. When optometrist Brett M. Paepke, OD, started looking at new equipment for FirstView Eye Care Associates in Plattsburgh, N.Y., he knew exactly where he wanted to see improvement. “First, I was looking for a way to make the flow of refractive data more efficient,” he says. “Second, I was looking for greater accuracy in refractions.”

Dr. Paepke’s third objective, however, was not so easily quantified. “I also wanted to improve the patient’s experience,” he says. “Knowing that patients don’t really like refractions, I wanted to provide them with something different, superior and, ideally, more enjoyable.”

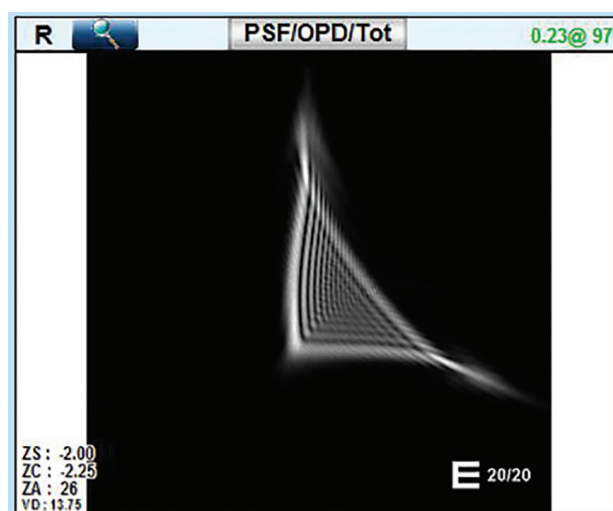
Since adding the OPD-Scan III wavefront aberrometer and the TRS-5100 digital autorefractor — the key components of Marco’s XFRACTIONSM system — along with the LM-600 auto lensmeter last fall, Dr. Paepke is realizing the measurable and immeasurable benefits he was seeking.

Speed, Accuracy, Efficiency

The OPD-Scan III combines numerous functions — autorefraction, keratometry, pupillometry, corneal topography, wavefront aberrometry, retroillumination and day/night measurements — to produce more than 20 diagnostics in 10 seconds per eye. In less than 1 minute, it provides a wavefront-optimized refraction that demonstrates whether or not a patient requires a full refraction to achieve optimal visual acuity. Data transfers to the TRS-5100 completing the required refraction with digital speed and accuracy.

“I like the accuracy and comprehensive nature of the data I receive from the XFRACTION process,” Dr. Paepke says. “When I enter the examination room, the results are on my screen. At a quick glance, I have a feel for what the patient’s optical path looks like and what his best-corrected vision should be.”

The LM-600 auto lensmeter reads the patient’s current correction, which is transferred to the TRS 5100



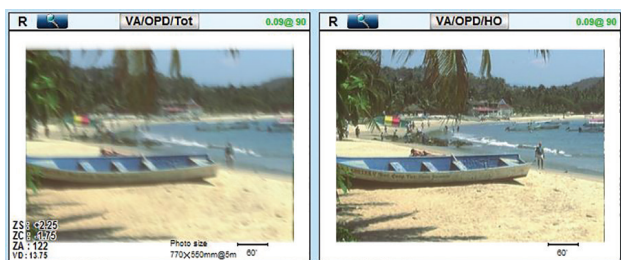
The Point Spread Function (PSF) shows what a point of light looks like when imaged through the patient’s optical system; in this case it explains his night-time glare shaped “like a cross.”

Making the Comprehensive Eye Exam More Comprehensive

Being able to acquire so much data in so little time with the XFRACTION process broadens the range of a comprehensive eye examination, and in at least one case at Dr. Paepke’s practice, it restored a patient’s credibility with his wife.

“All of my patients have technician-guided topography and OPD-Scan III performed as part of a comprehensive eye examination,” he says. “I then review the data with the patient in the examination room, making sure to connect any anomalies to his complaints. Having topography data available for every patient has shown me many cases of corneal conditions that I might not have detected otherwise.”

“I’ve even saved marriages with it,” Dr. Paepke says with a smile. He is quick to explain: “A 60-year-old truck driver had a chief complaint of nighttime glare that was shaped like a cross. His wife thought he was making it up, but I was able to show her a point-spread function map that clearly demonstrated the cross-shaped glare that was being generated by the patient’s cataracts.”



The beach scene on the left is the uncorrected view, with the corrected view on the right. Utilizing this display from the OPD viewing software allows you to show patients, or parents, the effect of the prescription on their vision.

via smart card and is seamlessly uploaded into the practice's EHR system. "All refractive data are available on one touchscreen-based control unit on the TRS-5100," Dr. Paepke says. "I can effortlessly and immediately show the patient differences between his habitual correction and today's refractive result, which allows for an easier justification of the investment in new eyeglasses."

Improvements in efficiency and accuracy have been noticeable. "Having all refractive pretest data flow into the examination room and then having the final data flow into the EHR has saved time and eliminated the potential for transcription errors," Dr. Paepke says. "Considering the time needed for printing and transcribing the data, I estimate I'm saving 3 to 5 minutes per encounter. That's significant found time each day."

An Experience Patients Appreciate

In his 12 years of practice, Dr. Paepke has come to realize what many patients won't admit. "Most patients don't enjoy the refraction process," he says, "so having a faster, better defined, more accurate starting point, which in many cases might be the final prescription, interested me."

The XFRACTION process did not disappoint. "In traditional setups, a technician might perform an autorefractometer and manually enter data in the record," Dr. Paepke says. "With XFRACTION, everything is at my fingertips with minimal effort and capable of being uploaded to our EHR with the same ease."

Patients have noticed the difference, too. "Feedback has been great," Dr. Paepke says. "Patients love the XFRACTION experience, because it's different. It looks cool to them, and it helps me solve their problems. If I can be more efficient and accurate while providing a better patient experience, that's a solid technology."

Dr. Paepke has also realized a financial benefit since introducing the XFRACTION process. "We've restructured our professional fee schedule to account for the technology and done so in a way that more than covers

Added Value: Patient Education

Dr. Paepke's expectations for the XFRACTIONSM process were well grounded and realistic: accuracy, speed and efficiency topped his list. He was surprised by an unexpected benefit.

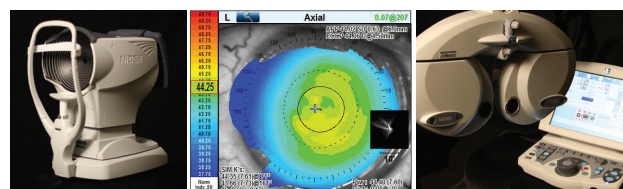
"I didn't anticipate the system would be so valuable from a patient-education perspective," he says. "For example, being able to demonstrate to a patient why a certain contact lens option is better for him based on his corneal topography has been a welcome benefit."

Dr. Paepke reviews topographic data with all contact lens patients and with any patients who show issues in need of discussion. "I use the uncorrected/corrected beach scenes to show parents how their children see versus how they should see," he says. "I use the retroillumination views to demonstrate to people who have cataracts why they're having trouble with their vision and how surgery will help. Pretty much anything refractive that I would need to discuss with a patient can be done using the array of OPD maps and the examination room viewing software of the XFRACTION process."

the monthly payment on the equipment," he says. "This makes increased efficiency and sales of multiple pairs of eyeglasses icing on the cake."

Differentiate Your Practice

"There's no question that high-tech systems such as the XFRACTION process helps to differentiate my practice," Dr. Paepke says. "I think patients get tired of the same eye care experience over and over, and I think they're savvy enough to know when a practice is investing in technology to enhance their care. Anything I can do to elevate the patient's experience interests me." ■



Optical Path Diagnostix & Wavefront Optimized Refraction.

XFRACTIONSM

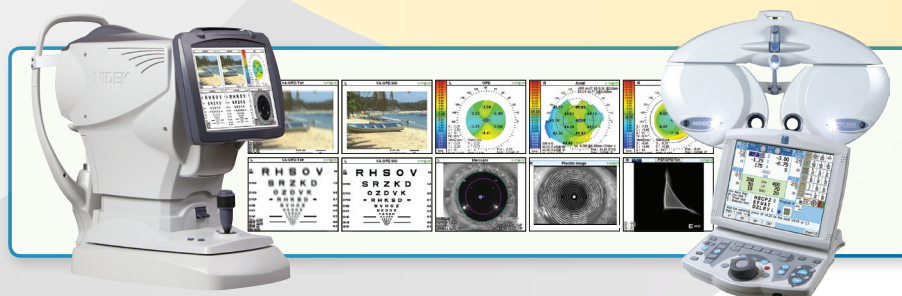
Optical Path Diagnostix & Wavefront Optimized Refraxon

XFRACTIONSM is a groundbreaking refractive process for today's thriving eyecare practice.

In this process, unique Optical Path Diagnostix are employed to define the physiological alignment of all optical path components. The OPD-Scan III runs over 20 diagnostics, corneal analytics, aberrometry, topography, and establishes the correct refractive starting point. This data is directly transferred to the TRS-5100 digital refractor, where either minor adjustments or full refractions are completed.

Refractions are reduced by 5 to 7 minutes on wavefront patients (compared to manual refractions), and the vast diagnostic information about the patient's optical pathway provides full understanding of their physiological optics — only possible with the addition of unique Marco wavefront technology. Other benefits include greater time efficiencies, superior patient flow, daily patient capacity increases, optical revenue growth in the 15-20% range, and more quality time with each patient. Patients requiring cataract and/or refractive procedures will also benefit from optimized IOL selections and surgical outcomes.

The overall patient experience is greatly elevated through shorter wait and exam times, more time for doctor interaction/consultation, and greater satisfaction with prescriptions. In addition, the advanced technology experience is one that is reflected in higher patient loyalty and positive references to the practice.



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